

IN THE CLAIMS

Please amend the claims as follows:

1. (Previously Presented) A transfer mechanism for transferring an object to be processed, comprising:

a casing for defining a transfer chamber under a vacuum state, the casing having a transfer port for transferring the object between the transfer chamber and an outside thereof;

a guide rail substantially horizontally installed in the transfer chamber;

a moving part including a moving body movably installed on the guide rail and a holding body for holding the object;

a horizontally driving unit for moving the moving body of the moving part along the guide rail;

a position detecting linear scale installed on the moving part and extending in a moving direction of the moving part; and

a plurality of position detecting sensors installed at a height corresponding to the linear scale on an inner surface of the casing, the position detecting sensors being disposed in the moving direction of the moving part such that a distance between two neighboring position detecting sensors is shorter than a length of the linear scale.

2. (Previously Presented) The transfer mechanism of claim 1, wherein the moving part further includes a supporting member for vertically movably connecting the holding body to the moving body, and

the transfer mechanism further includes an elevation mechanism for raising and lowering the supporting member with respect to the moving body.

3. (Previously Presented) The transfer mechanism of claim 2, wherein a horizontally transferring unit for moving the object only in a horizontal direction through the transfer port is installed in the outside of the casing; and

the elevation mechanism performs a positioning of the object held in the holding body to a height corresponding to the horizontally transferring unit.

4. (Previously Presented) The transfer mechanism of claim 2, wherein the moving body includes a stopper for restricting the lowest position of the supporting member and moves while the supporting member is at the lowest position thereof.

5. (Previously Presented) The transfer mechanism of claim 2, wherein the elevation mechanism includes:

a push rod extending through a bottom portion of the casing and making a contact with the supporting member;

a vertically driving unit disposed in the outside of the casing, for raising and lowering the push rod; and

a sealing unit for airtightly sealing a gap between the push rod and the casing.

6. (Original) The transfer mechanism of claim 1, wherein the horizontally driving unit is a linear motor mechanism including armature coils installed in the casing along the moving direction of the moving body and a field magnet installed on the moving body; and

a separation wall for airtightly separating the armature coil from the inside of the transfer chamber is installed in the casing.

7. (Original) The transfer mechanism of claim 1, further comprising a magnetic levitation device for levitating the moving body from the guide rail.

8. (Original) The transfer mechanism of claim 1, further comprising a gas jetting levitation device for levitating the moving body from the guide rail.

9. (Previously Presented) The transfer mechanism of claim 2, wherein a partition wall for dividing the transfer chamber into an upper portion and a lower portion is installed in the casing;

the holding body of the moving part is disposed in the upper portion of the transfer chamber while the moving body of the moving part is disposed in the lower portion of the transfer chamber;

the partition wall has a slit for allowing the supporting member of the moving part to move therethrough; and

the transfer mechanism further includes:

a gas supplying system for supplying an inactive gas to the upper portion of the transfer chamber, and

a gas exhausting system for evacuating the gas from the lower portion of the transfer chamber.

10. (Canceled)

11. (Previously Presented) A processing system comprising:

(a) a main transfer mechanism including:

a casing for defining a main transfer mechanism under a vacuum state, the casing having a plurality of transfer ports;

a guide rail substantially horizontally installed inside the transfer chamber under the vacuum state;

a moving body movably installed on the guide rail;

a horizontally driving unit for moving the moving body along the guide rail;

an elevation supporting structure having a holding body for holding an object to be processed and a supporting member for vertically movably connecting the holding body to the moving body; and

an elevation mechanism for raising and lowering the supporting member of the elevation supporting structure with respect to the moving body;

(b) an auxiliary transfer mechanism including a casing for defining an auxiliary transfer chamber under a vacuum state which selectively communicates with the main transfer chamber; and an auxiliary transfer unit installed in the auxiliary transfer chamber;

(c) a load-lock mechanism including a casing for defining a load-lock chamber which selectively communicates with the auxiliary transfer chamber and is selectively evacuated;

(d) an entrance transfer mechanism including a casing for defining an entrance transfer chamber under an atmospheric state which selectively communicates with the load-lock chamber; and an entrance transfer unit installed in the entrance transfer chamber;

(e) a cassette station connected to the entrance transfer chamber, for mounting therein a cassette container which accommodates a plurality of objects to be processed;

(f) a plurality of individual transfer mechanisms installed to correspond to the respective transfer ports of the main transfer mechanism, each of the individual transfer mechanisms including a casing for defining an individual transfer chamber under a vacuum

state which selectively communicates with the main transfer chamber via the corresponding transfer port; and an individual transfer unit installed in the individual transfer chamber; and

(g) a plurality of processing apparatuses installed to correspond to the respective individual transfer mechanisms, each of the processing apparatuses including a casing for defining a vacuum processing chamber which selectively communicates with the corresponding individual transfer chamber, and performing a predetermined process on the object therein.

12. (Original) The processing system of claim 11, wherein the casing of the main transfer mechanism includes at least one of a plurality of casing segments connectable with each other, each of the casing segments having at least one of the transfer ports; and

the guide rail includes at least one of a plurality of guide rail segments connectable with each other.

13. (Previously Presented) A processing system comprising:

(a) a main transfer mechanism including:

a casing for defining a main transfer mechanism under a vacuum state, the casing having a plurality of transfer ports;

a guide rail substantially horizontally installed inside the transfer chamber under the vacuum state;

a moving part having a moving body movably installed on the guide rail and a holding body for holding an object to be processed;

a horizontally driving unit for moving the moving body of the moving part along the guide rail; and

a plurality of position detecting sensors for detecting the position of the moving part, the position detecting sensors being disposed in the casing in a moving direction of the moving part such that neighboring position detecting sensors are spaced from each other;

(b) an auxiliary transfer mechanism including a casing for defining an auxiliary transfer chamber under a vacuum state which selectively communicates with the main transfer chamber; and an auxiliary transfer unit installed in the auxiliary transfer chamber;

(c) a load-lock mechanism including a casing for defining a load-lock chamber which selectively communicates with the auxiliary transfer chamber and is selectively evacuated;

(d) an entrance transfer mechanism including a casing for defining an entrance transfer chamber under an atmospheric state which selectively communicates with the load-lock chamber; and an entrance transfer unit installed in the entrance transfer chamber;

(e) a cassette station connected to the entrance transfer chamber, for mounting therein a cassette container which accommodates a plurality of objects to be processed;

(f) a plurality of individual transfer mechanisms installed to correspond to the respective transfer ports of the main transfer mechanism, each of the individual transfer mechanisms including a casing for defining an individual transfer chamber under a vacuum state which selectively communicates with the main transfer chamber via the corresponding transfer port; and an individual transfer unit installed in the individual transfer chamber; and

(g) a plurality of processing apparatuses installed to correspond to the respective individual transfer mechanisms, each of the processing apparatuses including a casing for defining a vacuum processing chamber which selectively communicates with the corresponding individual transfer chamber, and performing a predetermined process on the object therein.

14-18. (Canceled)

19. (Previously Presented) A transfer mechanism for transferring an object to be processed, comprising:

a casing for defining a transfer chamber under a vacuum state, the casing having a transfer port for transferring the object between the transfer chamber and an outside thereof;

a guide rail substantially horizontally installed inside the transfer chamber under the vacuum state;

a moving part including a moving body movably installed on the guide rail and a holding body for holding the object;

a horizontally driving unit for moving the moving body of the moving part along the guide rail; and

a plurality of position detecting sensors for detecting the position of the moving part, the position detecting sensors being disposed in the casing in a moving direction of the moving part such that neighboring position detecting sensors are spaced from each other,

wherein the moving part further includes a supporting member for vertically movably connecting the holding body to the moving body, and the transfer mechanism further includes an elevation mechanism for raising and lowering the supporting member with respect to the moving body, and

wherein the transfer mechanism further comprises:

a position detecting linear scale installed on at least one of the moving body, the holding body and the supporting member and extending in the moving direction of the moving body,

wherein the position detecting sensors are installed at a height corresponding to the linear scale on an inner surface of the casing, the position detecting sensors being disposed in the moving direction of the moving body such that a distance between two neighboring position detecting sensors is shorter than a length of the linear scale.

20-23. (Canceled)

24. (New) A transfer mechanism for transferring a disk shaped object to be processed, comprising:

a common transfer chamber under a vacuum state, wherein transfer ports are disposed in a longitudinal direction of the common transfer chamber;

a guide rail installed in the longitudinal direction of the common transfer chamber;

a moving body movable along the guide rail;

a object holding member, vertically movably installed to the moving body, and having a holding part for holding the object and a supporting part for supporting the holding part; and

mechanisms for raising and lowering the object holding member, wherein the raising and lowering mechanisms are installed apart from each other at positions corresponding to the transfer ports,

wherein the common transfer chamber is divided into an upper space and a lower space by a partition wall which has a guide slit allowing horizontal movement of the Supporting part.

25. (New) The transfer mechanism of claim 24, further comprising a linear motor mechanism for moving the moving body,

wherein armature coils of the linear motor mechanism are installed in the longitudinal direction of the common transfer chamber, and a field magnet is installed on the moving body.

26. (New) The transfer mechanism of claim 25, wherein the armature coils and the field magnet are separated by a vacuum separation wall.

27. (New) The transfer mechanism of claim 24, wherein the moving body is levitated from the guide rail by a magnetic levitation device.

28. (New) The transfer mechanism of claim 24, wherein the moving body is levitated from the guide rail by a gas jetting levitation device.

29. (New) The transfer mechanism of claim 24, further comprising:
a gas supplying unit for supplying an N₂ gas or an inactive gas to one of the spaces in which the holding part is disposed;

a gas exhausting unit, installed at the other of the spaces in which the holding part is not disposed, for evacuating the common transfer chamber under the vacuum state.